

The Honorable Ricardo S. Martinez

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8 IN THE UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF WASHINGTON AT SEATTLE

9 RING & PINION SERVICE INC.,

10 Plaintiff,

11 v.

12 ARB CORPORATION LTD.,

13 Defendant.

Civil Action No. C09-586-RSM

RING & PINION SERVICE'S MOTION FOR
SUMMARY JUDGMENT

Note on Motion Calendar: December 16, 2011

Oral Argument Requested

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16 Ring & Pinion Service ("RR&P") seeks an order on summary judgment that its locking
17 differential does not infringe ARB Corporation's ("ARB") US patent number 5,591,098. Patent
18 law encourages competitors to rely on claim language in the course of designing around patents
19 to develop competitive products. Following the Court's prior claim construction, RR&P has done
20 just that. The claims of the '098 patent require a cylinder formed in the differential carrier, and
21 because the RR&P differential does not have such a cylinder it does not literally infringe the
22 patent. Instead, RR&P forms a piston in the carrier, with the piston being received within a
23 cylinder formed in the locking ring. To the extent this inverted configuration can be considered
24 equivalent to the claimed configuration it was admittedly a known substitute and therefore
25 cannot infringe the patent under the doctrine of equivalents as a matter of law. Consequently,
26 summary judgment of noninfringement should be granted in favor of RR&P.

RING & PINION SERVICE'S MOTION FOR
SUMMARY JUDGMENT - 1

Civil Action No. C09-586RSM

RRPI-6-1003P31 MSJ

LOWE GRAHAM JONES ^{PLLC}

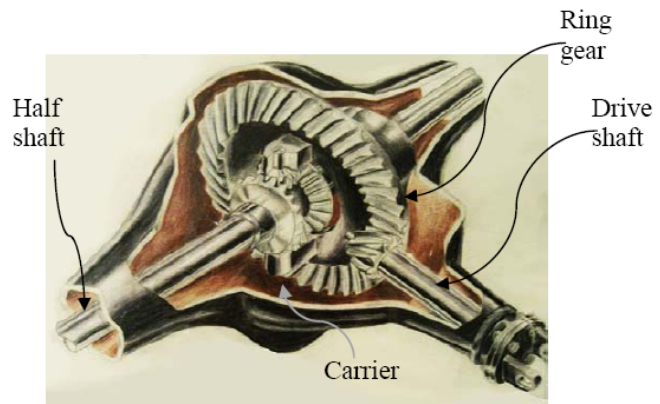
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THE ARB PATENT AND RELATED BACKGROUND

Locking differentials in general

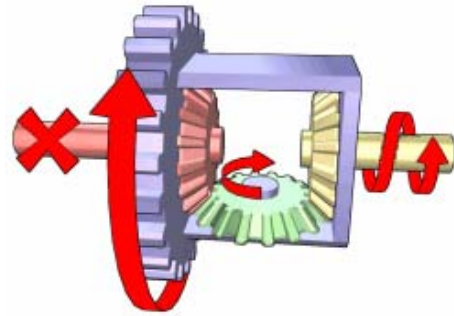
ARB's '098 patent relates to a "locking differential" for use in a motor vehicle. *See* US Patent 5,591,098, attached as Exhibit 1. Cars and trucks commonly have an engine at the front of the vehicle and a drive shaft that is turned by the force produced by the engine. In many cases, the drive shaft transfers the rotational force from the engine at the front to the wheels at the back. Because the drive shaft extends along the length of the vehicle, it is perpendicular to the axles on which the wheels are mounted. A combination of gears, typically in the form of a "differential," is used to translate the input rotational force from the drive shaft to the output rotational force of the wheel axles.

The image below is demonstrative and is intended to illustrate the operation of the differential. The drive shaft extends from the engine at the front to the differential at the rear, and terminates in a pinion gear having beveled teeth as shown. The pinion gear on the drive shaft meshes with the teeth of a "ring gear." Rotation of the drive shaft thereby causes rotation of the ring gear through the interaction of the teeth on the pinion gear and the ring gear. The ring gear is attached to a "carrier" or "cage" which internally includes a cluster of opposing bevel gears connected to a pair of "half shafts" that lead to the rear wheels of the vehicle.



The cluster of bevel gears within the carrier is responsible for the differential action. In some instances the wheels of the vehicle may need to turn at different rates. For example, when turning a corner the inner wheel must turn at a slower speed than the outer wheel. A differential of the type described above is generally designed to drive a pair of wheels with equal torque even while allowing them to turn with different speeds. This is accomplished through the

operation of the bevel gears provided within the carrier. As illustrated in the demonstrative image here, the carrier (shown in blue, including a simplified rectangular support secured to the ring gear) rotates with the ring gear in the direction of the large red arrow. The internal bevel gears (one red, one green, and one yellow) are meshed with each other, with the opposing gears (red and yellow) being connected to the wheel half axles. The meshing of the bevel gears results in an opposing relationship in which the turning of the red gear in one direction causes the turning of the yellow gear in the opposite direction. Thus, in the event one of the wheels (such as the red side) encounters resistance and slows or stops its rotation, the connection of the pinion gears within the carrier causes an additional rotation to be applied to the opposite wheel. While the carrier is spinning at a rate determined by the drive shaft, the gears within the carrier allow each of the two wheels to turn somewhat faster or somewhat slower than the speed of the carrier.

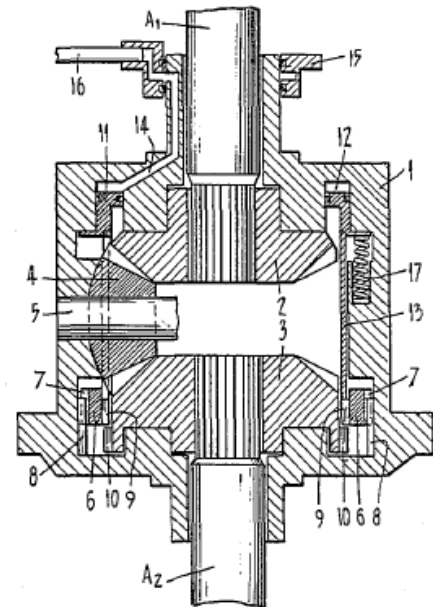


On occasion it may be desirable to lock the opposing wheels so that they turn at the same rate and do not have differential operation. The differential operation described above can reduce overall torque, thereby reducing traction. If the wheels are locked to common rotational speeds then traction can be improved. One way to prevent differential action is to lock the bevel gears to the carrier so that the bevel gears cannot move independently of the rotation of the carrier. In an unlocked configuration the left and right bevel gears (red and yellow) can spin freely from the carrier, and the rotation of each of the left and right gears is provided by the center green bevel gear. In a locked configuration the left and right bevel gears are each pinned to the carrier so that each rotates at the same rate as the carrier. This form of operation may be one that is desired only under certain situations, thereby making it desirable to be able to selectively lock or unlock the wheels for simultaneous or differential operation.

The ARB patent is directed to a “locking differential” that allows for selectively locked or unlocked modes of operation. By operating a switch, the driver can cause the vehicle to function with the differential locked or unlocked, as desired.

ARB’s prior patent number 4,759,232

Prior to obtaining the patent at issue in this action, ARB obtained US Patent No. 4,759,232 for a locking differential. *See* Exhibit 2. The ‘232 patent included a single drawing showing the locking differential in cross-section. Similar to the discussion above, the illustration here taken from the ‘232 patent includes a pair of opposing bevel gears 2, 3 that are mated with corresponding half axles A1, A2 leading to the wheels. The bevel gears are each engaged with a common pinion gear 4 that is mounted on a shaft 5. In this configuration, rotation of one of the pinion gears in a first direction causes rotation of the other pinion gear in the opposite direction. As described above, because this relative rotational movement occurs within the rotating carrier, it is added to or subtracted from the rotation of the carrier itself, thereby providing for differential movement of the wheels secured to the half axles.



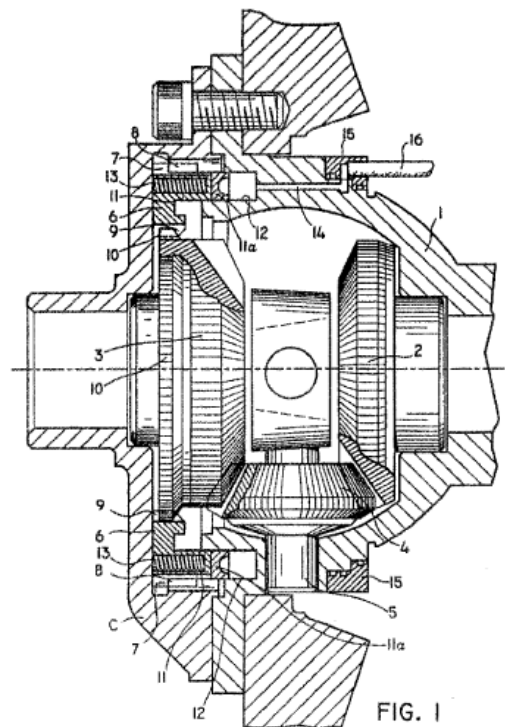
In the case of the ‘232 patent, the differential includes the ability to selectively lock the bevel gears to prevent differential rotation. The locking and unlocking function is implemented by a locking ring or “annulus” 6. The image above is a cross-section, and therefore the full circular shape of the locking ring is not visible. The locking ring has inner teeth 9 that mate with teeth formed on the bevel gear 3, and outer teeth 7 that engage spline teeth formed on the differential casing. When the locking ring is positioned axially downward from the perspective of the image above, it engages the teeth on both the bevel gear and the differential casing to lock the bevel gear in position for fixed rotation with the casing. But when the locking ring moves

axially upward the teeth are disengaged, allowing for differential rotation of the type described above.

As the '232 patent explains, the axial movement of the locking ring is accomplished through an annular piston 11 arranged in an annular cylinder 12 "formed in" the casing. *See* '232 patent, at Ex. 2, col. 2 line 12. Thus, the casing is molded such that a portion of the casing defines a cylinder shape. The piston is attached to an actuating sleeve extending from the piston to the locking ring. The patent further explains that the piston 11 is actuated by means of compressed air that is communicated to the cylinder through a passage 14 "formed in" the casing. As with the cylinder, the passage is an integrally formed portion of the casing. A piston return spring 17 bears against the piston 11 in order to bias the piston towards the deactivated position. Accordingly, delivery of compressed air to the cylinder acts against the piston, causing movement of the sleeve and the locking ring into the locked position. Releasing the pressure in the cylinder allows the force of the return spring to move the piston to the original position, thereby moving the locking ring to the original position.

The patent-in-suit, number 5,591,098

When ARB filed the application for the '098 patent at issue in this action, it explained that the actuator and the locking ring in a differential have always been located on opposite sides of the pinion gear. Ex. 1, at col. 1, ln. 21-27. As is visible in Figure 1 from ARB's '232 patent (above), the piston 11, air cylinder 12, and return spring 17 are all on one side of the pinion gear 4 while the locking ring 6 is on the other side. ARB explained in the '098 patent that this split geometry hinders the implementation of a locking differential in some cases because of limited



space or other reasons. Ex. 1, at col. 1, lines 27-34. Accordingly, the '098 patent sought to move the actuator and locking ring to the same side of the pinion gear.

Figure 1 of the '098 patent illustrates a locking differential in which the locking ring and actuator are on the same side of the pinion gear (reproduced above; note that the figure from the '098 patent is rotated 90 degrees from the perspective of the '232 patent). As shown, the principal difference between the differential of the '098 patent and that of the '232 patent is that the piston 11, air cylinder 12, and return springs 13 are all positioned on the same side of the pinion gear 4. Likewise, the locking ring 6 is positioned on the same side of the pinion gear as each of these components. The '098 patent explains that the cylinder is "formed in" the carrier. *See* '098 patent at col. 2, line 57.

CLAIM CONSTRUCTION

The claims at issue

ARB contends that the RR&P differential infringes claims 1-3, 5-8, and 11-14 of the '098 patent. *See* ARB's infringement contentions, attached as Ex. 3. Each of claims 2, 3, 5-8, and 11-14 depends from independent claim 1. If claim 1 is not infringed then the remaining claims are not infringed and therefore only claim 1 need be addressed in this motion.

The Court's prior claim construction

Earlier in this action the Court interpreted the meaning of certain claim terms that were relevant to the particular RR&P differential design then at issue. The Court's prior order on claim construction addressed the meaning of the terms "actuator" and "cylinder means." In particular, it held that "actuator" does not include the elements that exert the received forces, and that a "cylinder means" is a chamber shaped to mate with a piston portion of the actuator and allow for axial sliding of the piston. *See* Court Doc. 31.

Further claim construction

After the Court's prior claim construction ruling, RR&P developed a new differential design that ARB now accuses of infringing the ARB patent. The central issue is whether the new



1 design has a cylinder means “formed in” the differential carrier as required by claim 1. For the
2 purposes of this motion RR&P does not seek to revisit the Court’s prior definition of “cylinder
3 means.” At the time of the prior order, however, there was no dispute over the meaning of the
4 term “formed in” and therefore the Court did not construe it. This term is central to the
5 application of the claims to the new design, however, and therefore the term must be construed in
6 order to evaluate ARB’s claim for infringement.

7 ARB contends that no further claim construction is necessary because “cylinder means”
8 was already construed. *See* ARB’s position on claim construction, attached as Ex. 4. But at the
9 time of the Court’s earlier claim construction there was no dispute regarding whether the alleged
10 RR&P cylinder means was formed in the differential carrier, and the parties did not ask the Court
11 to interpret it. RR&P’s revised product, however, has been specifically designed to avoid the
12 requirement that the cylinder means must be formed in the differential carrier. To the extent there
13 is any dispute over the meaning if this claim language, it must be resolved by the Court.

14 ***Legal standard for claim construction***

15 The claims of a patent define the limit of the patent owner’s rights. *Phillips v. AWH*
16 *Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005). The meaning and scope of the claim language is a
17 question of law for the Court. *Markman v. Westview Instruments*, 52 F.3d 967, 976-79 (Fed. Cir.
18 1995). Claim language must be interpreted in a manner consistent with the ordinary to a person
19 of ordinary skill in the relevant art at the time of the application. *Phillips*, 415 F.3d at 1312-13.
20 To determine the meaning of the claims, the Court should first consult the intrinsic evidence,
21 which includes the claims, the specification, and the prosecution history. *Primos, Inc. v. Hunter’s*
22 *Specialties, Inc.*, 451 F.3d 841, 847-48 (Fed. Cir. 2006).

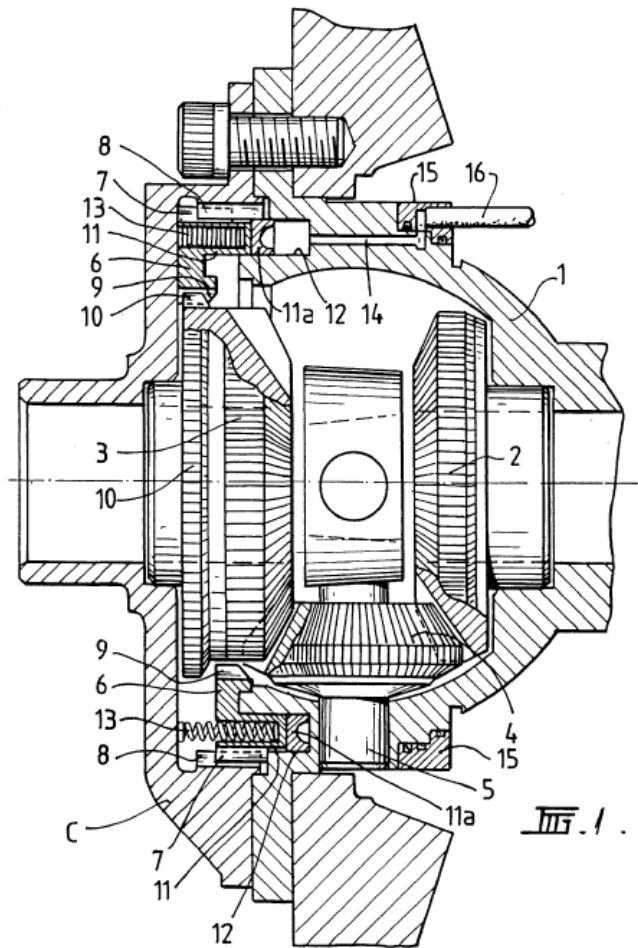
23 It is a fundamental rule of claim construction that terms are construed with the meaning
24 with which they are presented in the patent. Thus, claims must be construed so as to be
25 consistent with the specification. *Merck & Co., Inc. v. Teva Pharms. USA, Inc.*, 347 F.3d 1367,
26 1370 (Fed. Cir. 2003). The patent specification has been called the most important guide to claim



construction. *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996). Within the specification, the patentee may provide his own definitions for claim terms, either explicitly or implicitly. *Invitrogen Corp. v. Biocrest Mfg., L.P.*, 327 F.3d 1364, 1367 (Fed. Cir. 2003); *Bell Atlantic Network Servs., Inc. v. Covad Communications Group, Inc.*, 262 F.3d 1258, 1268 (Fed. Cir. 2001) (“[T]he specification may define claim terms ‘by implication’ such that the meaning may be ‘found in or ascertained by a reading of the patent documents.’”). Likewise, claims cannot be broader in scope than the invention that is set forth in the specification. *On Demand Machine v. Ingram Industries*, 442 F.3d 1331, 1340 (Fed. Cir. 2006).

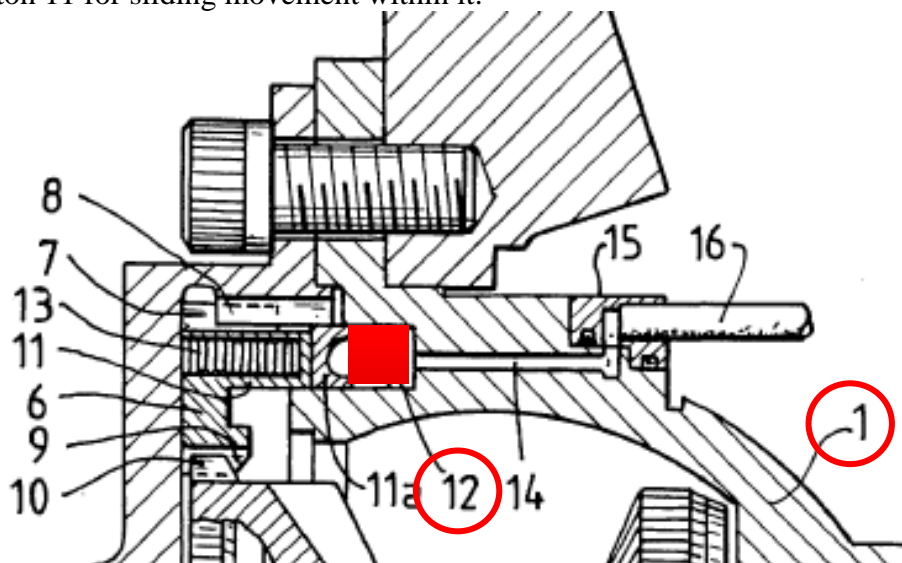
The meaning of “formed in”

The claim limitation at issue is: “cylinder means formed in said differential carrier and housing an actuator.” The Court has already construed “cylinder means” and “actuator,” but has not construed the term “formed in said differential carrier” as found in this limitation. The term “formed in” relates to the “form” or shape of the differential carrier. Thus, when combined with the Court’s prior construction, “cylinder means formed in said differential carrier” should be construed as “the differential carrier being shaped to include a cylinder means as an integral part of the differential carrier, the cylinder means being a chamber shaped to mate with a piston portion of the actuator to allow for sliding of the piston.”



Although the parties use slightly different wording for the proposed claim construction, both sides agree that the “formed in” portion of this claim limitation relates to the shape of the differential carrier, which corresponds to reference number 1 in Figure 1 of the ‘098 patent. ARB proposes to interpret this limitation as “a chamber created when the differential carrier is shaped to mate with a piston portion of the actuator and allow for sliding of the piston.” Thus, in each case the cylinder means “formed in” the differential carrier means that the cylinder is defined by the shape of the carrier. The cylinder that is formed in the carrier houses an actuator, or piston, to allow for sliding movement of the piston within the cylinder that is formed in the differential carrier. The proposed claim construction is also consistent with the patent and prosecution history, as explained below.

Drawings. The ‘098 patent illustrates a single embodiment of the claimed differential, shown in the one and only drawing provided in the patent (reproduced partially below). The differential includes a differential carrier 1 having a cylinder or “cylinder means” 12. The cylinder 12 (filled in with red, below) is “formed in” the carrier 1. In other words, the form or shape of the differential carrier includes an integral area having the shape of a cylinder, which receives the piston 11 for sliding movement within it.



Prosecution history. Perhaps the most succinct description of the invention is provided in the prosecution history for the '098 patent. In response to an office action rejecting the claims of the application, on March 6, 1996 the inventor explained:

As recited in independent Claim 1, the present invention is directed to a locking differential comprising a differential carrier 1 **housing** a pair of bevel gears 2, 3 and at least one pinion gear 4 which meshes with the pair of bevel gears 2, 3. A locking means 6 is **positioned within** the differential carrier 1 between the carrier 1 and one 3 of the bevel gears 2, 3 and is keyed or splined 7, 8 to the carrier 1. The locking means 6 includes locking teeth or spline means 7, 9, with the respective bevel gear 3 being **formed with** cooperating teeth or spline means 10. Cylinder means 12 is **formed in** the differential carrier 1 and **houses** an actuator 11 **positioned** to cause movement of the locking means 6 relative to the carrier 1, whereby the locking teeth or spline means 7, 9 on the locking means 6 engage the teeth or spline means 10 on the respective bevel gear 3 to prevent rotation of the bevel gear 3 relative to the carrier 1, to thereby lock the differential. *See Ex. 5, at p. 7 (emphasis added).*

Portions of the above excerpt from the file history have been emphasized to highlight the terms used by the inventor to indicate the configuration of various elements. Thus, some components are described as being “housed” within or “positioned” within the carrier, while other components are “formed in” the carrier. The use of these terms is consistent in every case: the cylinder is consistently described as being “formed in” the differential carrier, while the carrier more broadly “houses” the bevel gears and the locking means is broadly “positioned within” the carrier. At no point is the cylinder described as generically being positioned within or housed within the carrier; rather, it is always specifically described as being “formed in” the carrier. Through this distinction, the inventor clearly conveyed that the cylinder was part of the shape of the carrier itself, while other components were positioned or housed inside the space provided by the carrier.

1 **Abstract.** The specification of the '098 patent also maintains this same consistency. The
2 Abstract is almost a verbatim copy of the excerpt above from the prosecution history. *See* Ex. 2.
3 As with the description in the prosecution history, the cylinder 12 is “formed in” the carrier 1
4 while the carrier “houses” the bevel gears, the cylinder “receives” the piston, and the locking
5 ring is “positioned within” the carrier.

6 **Specification.** The body of the specification also uses the term “formed in” in the same
7 consistent way. For example, it states that the carrier is formed with a cylinder (col. 2, lines 14-
8 15). There are no instances in which the cylinder is described as being merely positioned within
9 or housed within the carrier. Conversely, components such as the locking ring and the bevel
10 gears are described as being positioned within or housed within the carrier but never described as
11 being formed in the carrier. With reference to Figure 1, this distinction makes sense. The form of
12 the carrier 1 is such that the cylinder 12 is an integrally shaped component. The cylinder is not
13 merely positioned somewhere within the space defined by the carrier, but rather is defined by the
14 form of the carrier itself. The other components such as the locking ring and the bevel gears,
15 however, are positioned within the interior space defined by the carrier and are not integral parts
16 of the carrier itself. Thus, the inventor carefully chose these words to describe the construction of
17 the invention and consistently used them throughout the specification and the prosecution
18 history.

19 **Claims.** The claims also maintain this uniformity. Claim 1 requires a cylinder means
20 “formed in” the differential carrier. But the carrier need only “house” the bevel gears and the
21 locking means is broadly “positioned within” the carrier. Similarly, the bevel gears have
22 integrally shaped teeth, and therefore the claim requires that the bevel gears are “formed with”
23 cooperating teeth or spline means. Claim 1 is set forth below, with the modifiers such as
24 “formed” and “housed” emphasized:



1 1. A locking differential comprising
2 a differential carrier **housing** a pair of bevel ears and at least one pinion gear
3 which meshes with said pair of bevel gears,

4 a locking means **positioned within** said differential carrier between said
5 differential carrier and one of said bevel gears and keyed or splined to the carrier,

6 said locking means including locking teeth or spline means,

7 said one of said bevel gears being **formed with** co-operating teeth or spline
8 means,

9 cylinder means **formed in** said differential carrier and **housing** an actuator
10 position to cause movement of said locking means relative to said carrier,
11 whereby said locking teeth or spline means on said locking means engage said
12 teeth or spline means on said one bevel gear to prevent rotation of said one bevel
13 gear relative to said carrier to thereby lock said differential,

14 said locking means and said cylinder means being **positioned adjacent** said
15 one of said bevel gears, and

16 a shaped cover plate **forming** part of said differential carrier and structured
17 and arranged to support said one of said bevel gears,

18 said cover plate comprising a cavity **formed** therein and in which said locking
19 means is located,

20 wherein said locking means is **positioned** on only one side of said pinion gear,

21 said actuator and cylinder means are **positioned** on only one side of said
22 pinion gear, and

23 said locking means, actuator and cylinder means are all **positioned** on the
24 same side of said pinion gear.

25 ARB used a variety of words in claim 1 to describe the structure, location and interaction
26 of the components of the claimed invention, including terms that only require certain



1 components to be positioned or housed within the carrier. The use of these different terms in
2 close proximity in the claims supports the conclusion that the inventor attached different
3 meanings to them. *Bancorp Services, L.L.C. v. Hartford Life Insurance Co.*, 359 F.3d 1367, 1373
4 (Fed. Cir. 2004). If the inventor meant for the cylinder to be generically somewhere inside the
5 carrier then it would have been very easy for the inventor to have claimed a cylinder means
6 “positioned within” or “housed within” the carrier. Indeed, having used those terms repeatedly
7 with other components, the inventor was surely familiar with them. The term “formed in” was
8 used intentionally and consistently to mean something different. As with the case of a bevel gear
9 “formed” with teeth, the cylinder “formed” in the carrier means that the cylinder is integrally
10 formed in the shape of the carrier.

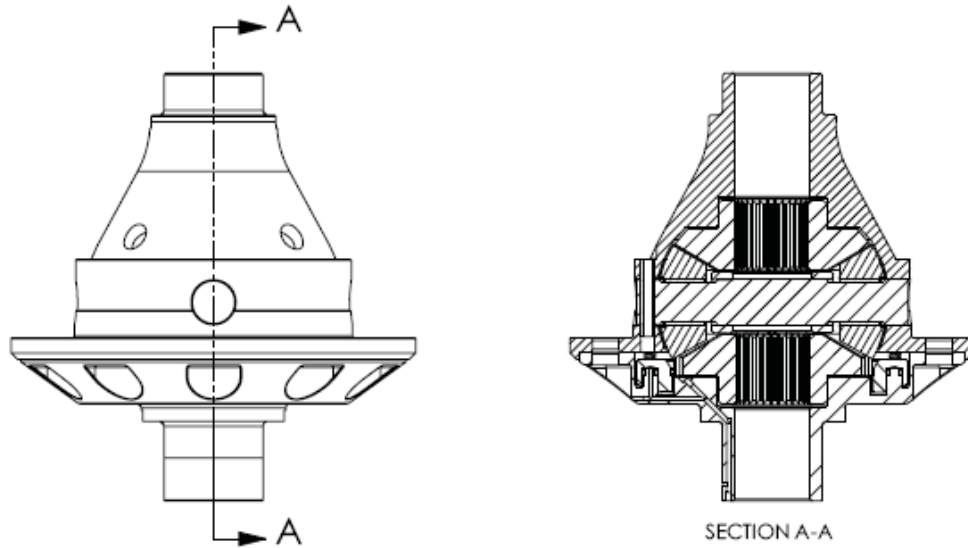
11 In view of the consistent manner in which ARB illustrated, described, and claimed the
12 invention, a person of ordinary skill in the art would necessarily conclude that a “cylinder means
13 formed in said differential carrier” would be interpreted to mean “the differential carrier being
14 shaped to include a cylinder means as an integral part of the differential carrier, the cylinder
15 means being a chamber shaped to mate with a piston portion of the actuator to allow for sliding
16 of the piston.”

17 **THE RR&P DIFFERENTIAL DOES NOT INFRINGE THE ARB PATENT**

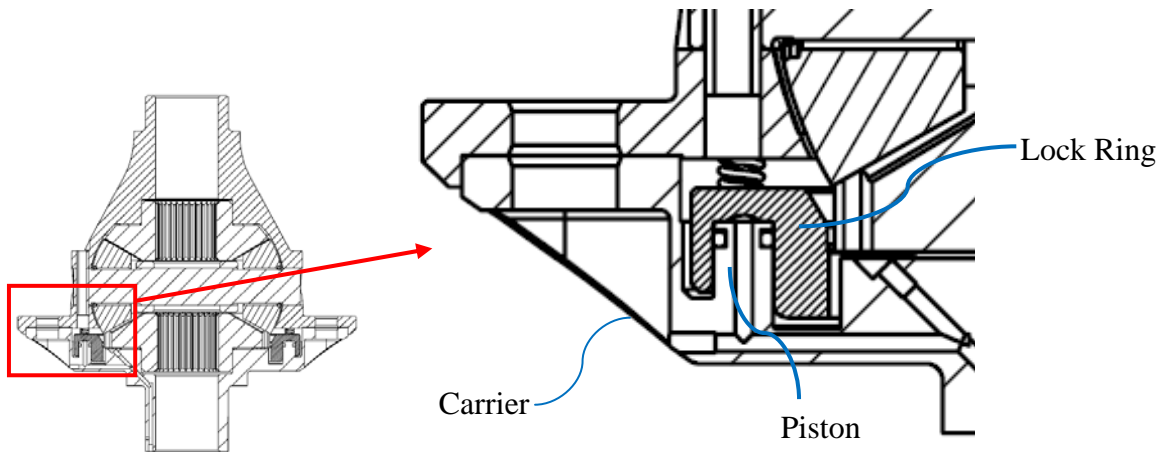
18 **The accused device**

19 The RR&P differential is specifically designed to avoid the requirement that the cylinder
20 means must be formed in the differential carrier and house an actuator. Designing or inventing
21 around the claims of granted patents in this fashion to make new products is encouraged under
22 the law. *See, e.g., Westvaco Corp. v. International Paper Co.*, 991 F.2d 735, 745 (Fed. Cir.
23 1993). RR&P has relied on the claim language in this manner in order to create a product
24 outside the scope of the claims submitted by ARB. An illustration of the RR&P differential is
25 illustrated below, in plan and sectional views. *See Ex. 6.*
26





A close-up view of the lower left portion of the differential is shown below, providing a clearer illustration of the construction and location of the piston and cylinder. As shown, there is no cylinder formed in the carrier. Instead, there is a cylinder formed in the lock ring. A piston is formed in the carrier, with the piston extending upward into the cylinder formed in the lock ring.



The RR&P differential does not literally infringe the ARB patent

To establish literal infringement, each and every limitation set forth in a claim must be found in an accused product, exactly in the manner as claimed. *Southwall Techs., Inc. v. Cardinal IG Co.*, 54 F.3d 1570, 1575 (Fed. Cir. 1995). Thus, if any claim limitation is absent there is no literal infringement as a matter of law. *Amgen Inc., v. F. Hoffmann-La Roche, Ltd.*,

580 F.3d 1340, 1374 (Fed. Cir. 2009). Claim 1 of the ARB patent requires a cylinder formed in the carrier. The RR&P product does not have a cylinder formed in the carrier, but rather has a cylinder formed in a lock ring. In addition, the cylinder formed in the carrier must house an actuator. In the RR&P device the actuator is formed in the carrier, and therefore the cylinder formed in the lock ring houses the actuator of the carrier. This configuration is literally the opposite of the required claim language, and therefore cannot literally infringe claim 1.

The RR&P differential does not infringe under the doctrine of equivalents

Nor does the RR&P differential infringe under the doctrine of equivalents. Where there is no literal infringement the Court must next consider whether the accused device nonetheless infringes under the doctrine of equivalents. *Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 520 U.S. 17, 38 (1997) (citing cases and describing equivalence as performing substantially the same function in substantially the same way to achieve substantially the same result).

The doctrine of equivalents, however, does not allow the claims to encompass all structures that are similar or equivalent to the omitted claim limitation. Indeed, the doctrine specifically *excludes* certain structures even though they may be indisputably equivalent, based on principles such as prosecution history estoppel, claim vitiation, the specific exclusion principle and whether the difference was a known equivalent. In this case, the known equivalence between the claimed piston-cylinder arrangement and RR&P's inverted cylinder-piston arrangement is central to the analysis.

The Supreme Court has held that the "patentee, as the author of the claim language, may be expected to draft claims encompassing readily known equivalents." *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 535 U.S. 722, 740 (2002). If the equivalent was foreseeable at the time of the application or the subsequent claim amendment then the patentee has an obligation to draft claims literally encompassing the equivalent. But if the equivalent is the result of later-developed technology and therefore "unforeseeable at the time of the application," then the doctrine of equivalents can be used to encompass the subject matter. *Id.* Interpreting *Festo*, the



1 Federal Circuit has held that “read in context, the Supreme Court in *Festo* neither excuses an
2 applicant from failing to claim ‘readily known equivalents’ at the time of application nor allows
3 a patentee to rebut the *Festo* presumption by invoking its own failure to include a known
4 equivalent in its original disclosure.” *Glaxo Wellcome, Inc. v. Impax Labs., Inc.*, 356 F.3d 1348,
5 1355 (Fed. Cir. 2004).

6 The foreseeability limitation on the doctrine of equivalents recognizes that “as between
7 the patentee who had a clear opportunity to negotiate broader claims but did not do so, and the
8 public at large, it is the patentee who must bear the cost of its failure to seek protection for [a]
9 foreseeable alteration of its claimed structure.” *Sage Prods. v. Devon Indus.*, 126 F.3d 1420,
10 1425 (Fed. Cir. 1997). “Thus, for a patentee who has claimed an invention narrowly, there may
11 not be infringement under the doctrine of equivalents in many cases, even though the patentee
12 might have been able to claim more broadly. If it were otherwise, then claims would be reduced
13 to functional abstracts, devoid of meaningful structural limitations on which the public could
14 rely.” *Id.* (citing *Conopco, Inc. v. May Dep’t Stores Co.*, 46 F.3d 1556, 1562 (Fed. Cir. 1994)).

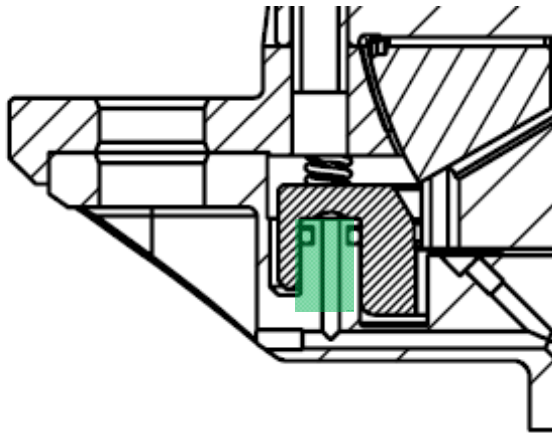
15 The claim language in *Sage*, like the limitation at issue here, defined a “relatively simple
16 structural device.” *Sage*, 126 F.3d at 1425. In *Sage*, the Federal Circuit held that a “skilled patent
17 drafter would foresee the limiting potential of the ‘over said slot’ limitation. No subtlety of
18 language or complexity of the technology, nor any subsequent change in the state of the art, such
19 as later-developed technology, obfuscated the significance of this limitation at the time of its
20 incorporation into the claim.” *Id.* If *Sage* had desired broader patent protection it should have,
21 and could have, submitted broader claims at the time of the application.

22 Other cases have also dealt with old and well-known technologies that could have readily
23 been incorporated into the claim. For example, in *Cross Med. Prods. v. Medtronic Sofamor*
24 *Danek, Inc.*, 480 F.3d 1335, 1343 (Fed. Cir. 2007), the claims related to a medical device. In
25 rejecting infringement under the doctrine of equivalents, the Federal Circuit explained that the
26



1 alleged equivalent was “an old and well known fundamental of basic machining that was entirely
2 foreseeable.”

3 In this case, the claims literally require a cylinder formed in the carrier, with the cylinder
4 housing an actuator. As noted above, the RR&P differential does not have a cylinder formed in
5 the carrier. Instead, a piston is formed in the carrier and a cylinder is formed in the locking ring.
6 This arrangement is shown in the image below, in which the piston (illustrated in green) is
7 housed within the cylinder formed in the locking ring (shown in cross-hatching). RR&P
8 acknowledges that this is essentially an inversion of the claimed piston and cylinder
9 arrangement.



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17 The reversal of the piston and the cylinder arrangement is a known substitution that was
18 foreseeable to ARB. RR&P’s expert Steven Becker testifies that piston and cylinder
19 arrangements have been used for hundreds of years. The technology is exceedingly old.
20 Likewise, the ability to reverse the orientation of a piston and cylinder in order to move a load is
21 as old as the development of the piston and cylinder itself. In any arrangement in which a piston
22 is on one side and the cylinder on the other, it is foreseeable to create an alternate structure that
23 reverses the orientation of the piston and cylinder. *See* Becker Dec. at ¶ 5.

24 ARB likewise agrees that the accused RR&P device has reversed the piston and cylinder
25 arrangement required by the literal claim language. According to ARB’s expert Charles
26 Birdsong, the arrangement as specified in claim 1 is illustrated in a simplified form below at the



left, while the currently accused arrangement is illustrated below at the right. *See* excerpted Birdsong Report, attached as Ex. 7, at p. 29.



The version at the left is in accordance with claim 1 of the ARB patent, which requires a cylinder formed in the carrier. As shown, the carrier is in gray and forms the shape of a cylinder. The cylinder is filled with air (in blue), and the piston is red. At the right, the accused RR&P configuration has a piston formed as an integral part of the gray carrier and a cylinder formed within the red locking ring. In the current RR&P device, the orientation of the cylinder and piston has been inverted from the literal language of the claims.

ARB's Mr. Birdsong agrees that the claimed piston-cylinder arrangement is an inversion of the accused RR&P arrangement, and that the RR&P arrangement is a foreseeable substitution. As he explains in his expert report, "the two cylinders are known to be interchangeable. Engineers commonly flip the arrangement of cylinders in this manner." *Id.*, at p. 23. Mr. Birdsong further states that "the accused device simply replaces one cylinder design with a known equivalent." *Id.* at p. 26. After describing the operation of these inverted arrangements, he similarly concludes that "people of ordinary skill consider these cylinders to be interchangeable." *Id.* at p. 28. He then describes a specific example with respect to a backhoe, concluding that "reversing the orientation of a cylinder to change the end that moves is a common design alternative well known to people of ordinary skill in the art." *Id.* at p. 29. Finally, Mr. Birdsong explains, the "accused cylinder effectively flips the proposed cylinder around. A person of ordinary skill in the art would find these two cylinders to be known equivalents." *Id.* at p. 29-30.



1 RR&P agrees with Mr. Birdsong and ARB that the reversed piston/cylinder arrangement
2 is a known equivalent, and that a person of ordinary skill would have known that at the time of
3 the application. As such a readily known substitution it was foreseeable at the time of the
4 application that others might reverse the orientation of the piston and cylinder. If ARB wanted
5 claims to encompass such equivalent structures, it had a duty to present such foreseeable claims
6 to the Patent Office so that the Patent Office could evaluate them for patentability in the first
7 instance. As between ARB, which was in a position to submit broader claims if it wanted them,
8 and RR&P, which is entitled to rely on the scope of the claims as submitted, it is ARB which
9 must bear the cost of limited literal claim scope. Because ARB did not seek claims encompassing
10 this foreseeable alteration, the currently accused configuration is precluded from infringement
11 under the doctrine of equivalents as a matter of law.

12 CONCLUSION

13 Patent law encourages competitors to design around patents, and in the course of
14 designing around patents parties are entitled to rely on claim language and legal principles
15 limiting the scope of the doctrine of equivalents. ARB had the opportunity and the duty to seek
16 broader claims if it wanted its patent to encompass readily foreseeable modifications of the
17 claimed invention. Not having done so, the law allows RR&P to design around the claims by
18 manufacturing products that incorporate readily foreseeable modifications that avoid literal claim
19 requirements. RR&P has done so in this case, and its accused product does not infringe any
20 claim of the ARB patent, either literally or under the doctrine of equivalents.

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1 DATED this 21st day of November, 2011.

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CERTIFICATE OF SERVICE

I certify that on November 21, 2011, I served RING & PINION SERVICE INC.'S MOTION FOR SUMMARY JUDGMENT via the Court's ECF system, which will forward copies to the following attorneys of record:

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